

Comparative Analysis of Post Operative Events Between Spinal Anesthesia And General Anesthesia in Laparoscopic Cholecystectomy: An Institutional Based Study

Simple Chahar¹, Vijay Kumar Dahiya^{2*}

¹Senior Resident, Department of Anesthesiology,
Maulana Azad Medical College & Lok Nayak Hospital, Delhi, India.

²MBBS, MS (Orthopaedics), Fellow Spine Surgery,
Central Institute of Orthopaedics, VMMC and Safdarjung Hospital, Delhi, India.

ABSTRACT

Background: Laparoscopic cholecystectomy was the gold standard for the surgical treatment of symptomatic cholelithiasis. The present study was conducted to compare the post operative events between spinal anesthesia and general anesthesia in laparoscopic cholecystectomy.

Materials and Methods: A study was carried out in 100 patients of either sex, undergoing elective laparoscopic cholecystectomy using spinal anesthesia and general anesthesia. All the patients were examined to assess their preoperative condition, demographic data and routine investigations. The patients were divided into two groups of 50 each: group A receiving general anesthesia and group B receiving spinal anesthesia. Postoperative pain was assessed at 4, 8, 12 and 24 hours by using the Visual Analogue Scale (VAS) after completion of procedure.

Results: In the present study in group A 30 patients were males and 20 patients were female & in group B 28 patients were males and 22 patients were females. Mean age of group A patients were 36.4yrs and mean age of Group B patients were 38.5 yrs. Mean operative time in group A patients was 65.5mins and mean operative time in group B patients was 66.9minutes. Average hospital stay for group A patients was 46.4 hours and group B patients was 38.9 hours. VAS score at

0, 4, 8, 12 and 24 hours was more in group A patients than in group B which suggests that group B had better analgesia than that of group A.

Conclusion: The present study concluded that group B i.e. spinal anaesthesia had better analgesia than that of group A i.e. general anaesthesia.

Keywords: Spinal Anaesthesia, General Anaesthesia, Postoperative Pain.

*Correspondence to:

Dr. Vijay Kumar Dahiya,
MBBS, MS (Orthopaedics),
Fellow Spine Surgery,
Central Institute of Orthopaedics,
VMMC and Safdarjung Hospital, Delhi, India.

Article History:

Received: 10-12-2019, **Revised:** 03-01-2020, **Accepted:** 29-01-2020

Access this article online	
Website: www.ijmrp.com	Quick Response code 
DOI: 10.21276/ijmrp.2020.6.1.067	

INTRODUCTION

Laparoscopic cholecystectomy was first introduced by Phillippe Mouret in 1987 and is now generally performed by many surgeons.^{1,2}

Laparoscopic cholecystectomy (LC) was the gold standard for the surgical treatment of symptomatic cholelithiasis. It may be awarded to minimally invasive nature of the procedure and associated with less postoperative pain, reduced hospital stays, and earlier return to daily activities.^{3,4}

LC is performed under general anesthesia and may be involved in postoperative pain and nausea and vomiting (PONV). Spinal anesthesia was a less invasive anesthetic technique that has

lower morbidity and mortality rates, compared with general anesthesia.⁵ Patients who received spinal anesthesia undergoing laparoscopy interventions were usually awake, felt less pain, and tended to ambulate earlier with no intubation and/or extubation.^{6,7} Also, the total cost of spinal anesthesia with respect to hospital stay, induction and recovery, the need for postoperative antiemetics and analgesia and the incidence of other complication was much lower when compared to general anesthesia.⁸ The present study was conducted to compare the post operative events between spinal anesthesia and general anesthesia in laparoscopic cholecystectomy.

MATERIALS AND METHODS

A study was carried out in 100 patients of either sex, undergoing elective laparoscopic cholecystectomy using spinal anesthesia and general anesthesia. Written informed consent was taken from the patients. Patients of age between 18 and 60 years with ASA physical status I and II were included in the study. The patients with ASA grade III and IV high risk patients, all emergency procedures, bleeding disorders, acute cholecystitis, pancreatitis and acute cholangitis, previous open surgery in upper abdomen, contraindication for pneumoperitoneum, cardiovascular disorders, respiratory disorders, renal disease and liver disease, circulatory instability, and patients with known sensitivity to local anesthetics were excluded from the study. All the patients were examined to assess their preoperative condition, demographic data and routine investigations. The patients were divided into two groups of 50 each: group A receiving general anesthesia and group B receiving spinal anesthesia.

After taking the patients to the operation theater, an intravenous line was secured in the right upper limb and infusion of 500 ml of Ringer's Lactate solution started. Blood pressure cuff, ECG electrode and capnography monitor were applied. The initial pulse, blood pressure (BP), respiratory rate, ECG and end tidal CO₂ (EtCO₂) were noted. All the patients were premeditated with Inj. Glycopyrrrolate 4 mcg/kg, Inj. Midazolam 0.02 mg/kg and Inj.

Ondansetron 0.08 mg/kg intravenously (i.v.). In patients randomized for spinal anesthesia, the patient was first made to lie in supine position and all the monitors were attached. Oxygen was then administered through ventimask at 3 l/minute. Then the patient was made to lie in left lateral decubitus position. A 25-G Quincke spinal needle was introduced in subarachnoid space at L3-L4 interspace under all aseptic and antiseptic precautions. After confirming free flow of cerebrospinal fluid, 0.3 mg/kg of hyperbaric Bupivacaine 0.5% was injected intrathecally in cephalad direction at a velocity of 0.1 ml/second. Then, after keeping the patient in the 15° Trendelenburg position for 5 minutes, the patient was again made to lie in a supine position. Approximately 10 minutes after intrathecal injection, the level of analgesia was checked. During this period, 500 ml of 0.9% Ringer's Lactate was infused. A segmental sensory (pin-prick) block, extending between T4 and L5 dermatomes, was obtained without any respiratory distress. Laparoscopic cholecystectomy was performed using the same techniques in both the groups. All the patients were monitored continuously both for clinical observation and noninvasive hemodynamic monitoring were recorded. Postoperative pain was assessed at 4, 8, 12 and 24 hours by using the Visual Analogue Scale (VAS) after completion of procedure. Other postoperative events, either related to surgical or especially to anesthetic procedure were recorded.

Table 1: Demographic data

Characteristics of patients	Group A	Group B
Gender		
Male	30	28
Female	20	22
Mean age	36.4	38.5
Mean operative time(minutes)	65.5	66.9
Average hospital stays (hours)	46.4	38.9

Table 2: Visual analogue scale score

Interval (hours)	Group A	Group B	P-value
0	4.56±0.56	2.32±0.32	<0.0001
4	3.34±0.37	1.78±0.45	
8	3.78±0.56	1.34±0.39	
12	3.12±0.45	1.04±0.23	
24	2.45±0.38	1.2±0.42	

RESULTS

In the present study in group A 30 patients were males and 20 patients were female & in group B 28 patients were males and 22 patients were females. Mean age of group A patients were 36.4yrs and mean age of Group B patients were 38.5 yrs. Mean operative time in group A patients was 65.5mins and mean operative time in group B patients was 66.9minutes. Average hospital stay for group A patients was 46.4 hours and group B patients was 38.9 hours. VAS score at 0, 4, 8, 12 and 24 hours was more in group A patients than in group B which suggests that group B had better analgesia than that of group A.

DISCUSSION

Regional anesthesia for laparoscopic cholecystectomy reduces the surgical stress response. In regional anesthesia, there is no airway instrumentation and there is low incidence of deep vein thrombosis.⁹

In the present study in group A 30 patients were males and 20 patients were female & in group B 28 patients were males and 22 patients were females. Mean age of group A patients were 36.4yrs and mean age of Group B patients were 38.5 yrs. Mean operative time in group A patients was 65.5mins and mean operative time in group B patients was 66.9 minutes. Average hospital stay for

group A patients was 46.4 hours and group B patients was 38.9 hours. VAS score at 0, 4, 8, 12 and 24 hours was more in group A patients than in group B which suggests that group B had better analgesia than that of group A.

Two studies comparing the spinal anesthesia and GA for LC Tiwari et al.¹⁰ and Tzovaras et al.¹¹ reported the better postoperative pain control and lower analgesic requirement in spinal anesthesia than GA due to lasting analgesia effect. In these 2 studies VAS levels at 6th and 8th hours after the surgery (median [range]; 1 [0–4] and 0 [0–6]).

According to the study by Samer et al. VAS scores at the 2nd - 4th hours were lower in the spinal anesthesia group compared to the other group.¹² In another study the VAS score at the 6th hour was lower in the spinal anesthesia group, but there was no difference in the VAS scores at the postoperative 12th and 24th hours.³ Sinha et al. reported PONV rates of 2% in spinal anesthesia patients undergoing LC, while 29% of patients in the general anesthesia group experienced PONV.¹³

According to the study by Samer et al. VAS scores at the 2nd - 4th hours were lower in the spinal anesthesia group compared to the other group.¹³ In another study the VAS score at the 6th hour was lower in the spinal anesthesia group, but there was no difference in the VAS scores at the postoperative 12th and 24th hours.³

In a study performed with 300 patients' laparoscopic surgery was started under spinal anesthesia, and 87.3% of the patients had right shoulder pain.¹⁴

CONCLUSION

The present study concluded that group B i.e spinal anaesthesia had better analgesia than that of group A i.e. general anaesthesia.

REFERENCES

1. Vecchio R, MacFayden BV, Palazzo F. History of laparoscopic surgery. *Panminerva Med* 2000;42:87–90.
2. Spaner SJ, Warnock GL. A brief history of endoscopy, laparoscopy, and laparoscopic surgery. *J Laparoendosc Adv Surg Tech A* 1997;7:369–73.
3. S. S. Bessa, K. M. Katri, W. N. Abdel-Salam, E.-S. A. El-Kayal, and T. A. Tawfik, Spinal versus general anesthesia for daycase laparoscopic cholecystectomy: a prospective randomized study. *Journal of Laparoendoscopic and Advanced Surgical Techniques*, 2012; 22(6): 550–5.
4. J. B. Lichten, J. J. Reid, M. P. Zahalsky, and R. L. Friedman. Laparoscopic cholecystectomy in the new millennium, *Surgical Endoscopy* 2001; 15(8): 867–72.
5. P. A. Grace, A. Quereschi, J. Coleman et al. Reduced postoperative hospitalization after laparoscopic cholecystectomy, *British Journal of Surgery* 1991; 78(2): 160–2.
6. S. S. Bessa, I. A. El-Sayes, M. K. El-Saiedi, N. A. Abdel-Baki, and M. M. Abdel-Maksoud. Laparoscopic cholecystectomy under spinal versus general anesthesia: a prospective, randomized study. *Journal of Laparoendoscopic and Advanced Surgical Techniques* 2010; 20(6): 515–20.

7. K. G. Pursnani, Y. Bazza, M. Calleja, and M. M. Mughal. Laparoscopic cholecystectomy under epidural anesthesia in patients with chronic respiratory disease. *Surgical Endoscopy* 1998; 12(8): 1082–4.

8. Lennox PH, Vaghadia H, Henderson C, Martin L, Mitchell GW. Small-dose selective spinal anesthesia for short-duration outpatient laparoscopy: recovery characteristics compared with desflurane anesthesia. *Anesthesia & Analgesia*. 2002 Feb 1;94(2):346-50.

9. Chilvers CR, Goodwin A, Vaghadia H, Mitchell GW. Selective spinal anesthesia for outpatient laparoscopy. V: Pharmacoeconomic comparison vs general anesthesia. *Can J Anesth* 2001;48:279-83.

10. Tzovaras G, Fafoulakis F, Pratsas K, Georgopoulou S, Stamatiou G, Hatzitheofilou C. Laparoscopic cholecystectomy under spinal anaesthesia: a pilot study. *Surg Endosc* 2006;20:580–2.

11. Tiwari S, Chauhan A, Chatterjee P, Alam MT. Laparoscopic cholecystectomy under spinal anaesthesia: a prospective, randomised study. *J Minim Access Surg* 2013; 9:65-71.

12. Tzovaras G, Fafoulakis F, Pratsas K, Georgopoulou S, Stamatiou G, Hatzitheofilou C. Spinal vs general anesthesia for laparoscopic cholecystectomy: interim analysis of a controlled randomized trial. *Arch Surg* 2008;143:497-501.

13. Sinha R., Gurwara A. K., Gupta S. C. Laparoscopic cholecystectomy under spinal anesthesia: a study of 3492 patients. *Journal of Laparoendoscopic & Advanced Surgical Techniques*. 2009;19(3):323–327. doi: 10.1089/lap.2008.0393.

14. Kar M, Kar JK, Debnath B. Experience of laparoscopic cholecystectomy under spinal anesthesia with low-pressure pneumoperitoneum--prospective study of 300 cases. *Saudi J Gastroenterol*. 2011;17:203-7.

Source of Support: Nil.

Conflict of Interest: None Declared.

Copyright: © the author(s) and publisher. IJMRP is an official publication of Ibn Sina Academy of Medieval Medicine & Sciences, registered in 2001 under Indian Trusts Act, 1882.

This is an open access article distributed under the terms of the Creative Commons Attribution Non-commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Cite this article as: Simple Chahar, Vijay Kumar Dahiya. Comparative Analysis of Post Operative Events Between Spinal Anesthesia And General Anesthesia in Laparoscopic Cholecystectomy: An Institutional Based Study. *Int J Med Res Prof*. 2020 Jan; 6(1): 287-89. DOI:10.21276/ijmrp.2020.6.1.067